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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,470	10/20/2006	Yutaka Nishioka	026390-00034	8564
4372 7590 06/28/2011 ARENT FOX LLP 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036			EXAMINER LOUIE, MANDY C	
			ART UNIT	PAPER NUMBER
			1715	
			NOTIFICATION DATE	DELIVERY MODE
			06/28/2011 ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com
IPMatters@arentfox.com
Patent_Mail@arentfox.com

Office Action Summary

Application No.

10/569,470

Applicant(s)

NISHIOKA ET AL.

Examiner

MANDY LOUIE

Art Unit

1715

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) 2,3 and 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6-10 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities: "with An inner wall" should be corrected to "with an inner wall". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim(s) 1, 6-8 and 10, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda [US 5462899] in view of Long [US 20030084848].

Regarding claim 1, Ikeda teaches a method for preparing a silicon oxide film deposited onto a substrate [abstract], which comprises the steps of mixing a raw gas obtained through the vaporization of a raw material comprising metal atoms for the oxide thin film such as TEOS [col 3, ln 50-52] (wherein silicon will be considered as metal upon interpretation of the resulting metal oxide film may be silicon oxide in claim 10, paragraphs 10-14 of the specification), and a carrier gas such as nitrogen [col 3, ln 55], and an oxidation gas such as oxygen gas or ozone [col 4, ln 1] in a gas-mixing

unit [col 4, ln 5-6], passing the gas mixture through a gas activating means (i.e. heated feed line to chamber) [col 4, ln 10-11], maintaining the gas activating means at a temperature that allows for intermediate reaction products between TEOS and the oxidant [col 4, ln 7-10], wherein it would have been obvious to one of ordinary skill in the art that the presence of the heat and oxidant would cause at least some breakdown of the gas mixture into metal atom containing molecules to generate intermediate reaction products (vapor phase decomposition), And supplying the gas mixture on a heated substrate placed in a reaction chamber as a chemical vapor phase growth apparatus [col 4, ln 20; col 3, ln 45-50] through the shower plate (dispersion plate) [col 3, ln 40-45] to thus make the gas mixture react with one another [abstract], wherein a rate of oxidation gas flow rate (i.e. second oxidant of 10 slm) is not less than 60% basis of the gas mixture (i.e. 1 slm of TEOS carried with nitrogen and 2 slm of first oxidant) [col 4, ln 20-26]. Although the prior art teaches forming the intermediate product (decomposing) within the heated mixer, and does not explicitly teach decomposing the gas mixture within the heated feed line, it would have been obvious to one of ordinary skill in the art to continue decomposing (forming the intermediate product) until the gas mixture is supplied to the substrate, which would include the heated feed line. However, Ikeda appears to be silent in teaching the pipe line with an inner wall surface area within a range of $4.8 \times 10^{-3} \text{ m}^2$ to $1.28 \times 10^{-1} \text{ m}^2$ is maintained at the heated temperature. Long remedies this.

As to claim 1, Long, drawn to oxide vapor deposition [0025], teaches a surface area of 0.25 m^2 is preferred so that gas provided in the gas line is at the desired

processing temperature [0060]. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a pipe line with an area of the claimed surface area range as suggested by Long. One would have been motivated to do so in order to ensure that the gas within the pipe is at the desired temperature.

Regarding claim 6, the prior art teaches the taught method avoids the disadvantageous inherent to the conventional premix method [col 2, ln 12-13] such as forming repeated solid oxides and accumulations in the piping [col 1, ln 49-52] and to form a film with low moisture content [col 2, ln 56]; therefore, it would have been apparent that the heating would have been maintained at a temperature avoiding disadvantageous such as film formation liquefaction.

Regarding claim 7, the prior art teaches the oxidation gas may be ozone [col 2, ln 27].

Regarding claim 8, the prior art teaches the carrier gas may be nitrogen [col 3, ln 55].

Regarding claim 10, the prior art teaches the silicon oxide film may be silicon dioxide [abstract].

Regarding claim 16, the prior art teaches the gas activating means comprises a heated pipe line (feed line) [col 4, ln 10]; wherein it would have been obvious to one of ordinary skill in the art to provide a heating means to heat the pipe line.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda in view of Long and further in view of Hayashi [US 20010012698].

Teaching of Ikeda and Long is aforementioned, but appears to be silent in teaching the substrate is made from one of the claimed materials in claim 9. Hayashi remedies this.

Regarding claim 9, Lee teaches integrated circuits (semiconductor devices) with a silicon oxide layer may be formed on substrate such as wafers made of silicon or insulators such MgO [0050]. It would have been obvious to one of ordinary skill in the art that MgO substrate would be an operable equivalent substrate to a silicon wafer for forming a semiconductor device comprising a silicon oxide layer.

Response to Arguments

Rejection under 112, first paragraph of claim 10 for enablement is withdrawn due to applicant's amendment.

Applicant's arguments with respect to claims 1, 6-10 and 16 over Ikeda have been considered but are moot in view of the new ground(s) of rejection necessitated by amendments (i.e. pipe line with an inner wall surface area within the claimed range).

Conclusion

1. No claim is allowed.
2. All the pending claims are subject to restriction/election requirement.
3. Claims 1, 6-10, 16 are rejected for the reasons aforementioned.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANDY C. LOUIE whose telephone number is

(571)270-5353. The examiner can normally be reached on Monday to Friday, 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. L./
Examiner, Art Unit 1715

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1715